

AMENDMENTS TO THE CLAIMS

Please amend the claims as indicated hereafter.

Claims:

1-7 (Canceled)

8. (Previously Presented) A semiconductor device electrostatic discharge protection structure on a substrate comprising:

a first doped region of opposite dopant than said substrate extending down from the surface of said substrate;

a first isolation element at the surface region first lateral boundary between said first doped region and said substrate;

a heavily doped second region with associated electrical contact area within said first doped region of similar dopant to said first doped region;

a heavily doped third region with associated electrical contact area within said first doped region of opposite dopant to said first doped region;

a heavily doped fourth region with associated electrical contact area within said substrate of opposite doping than said substrate;

a heavily doped fifth region with associated electrical contact area within said substrate of similar dopant to said substrate;

a heavily doped sixth region of same dopant as said doped second region located at the surface region second lateral boundary of said first doped region and said substrate;

a second isolation element adjacent to said fifth doped region and on opposite side from said fourth doped region;

a first gate element overlying said surface region between said fourth doped region and said sixth doped region;

a first insulation element layer on said substrate surface except on electrical contact areas;

a first electrical conduction element connecting said second and third doped regions to a first voltage source;

a second electrical conduction element connecting said fourth and fifth doped regions and said first gate element and to a second voltage source; and

a top passivation layer overlaying said device surface.

9. (Original) The protection structure of claim 8 wherein said substrate consists of P doped semiconductor material.

10. (Original) The protection structure of claim 8 wherein said first doped region is N doped with a concentration between $1E16$ and $1E18$ a/cm³, and forms a N-well within said substrate.

11. (Original) The protection structure of claim 8 wherein said second, said fourth and said sixth heavily doped regions are N doped to a concentration between $1E19$ and $1E21$ a/cm³.

12. (Original) The protection structure of claim 8 wherein said third and said fifth heavily doped region are P doped to a concentration between $E19$ and $E21$ a/cm³.

13. (Original) The protection structure of claim 8 wherein said sixth heavily doped region forms an FET with said heavily doped fourth region and said first gate element.

14. (Currently Amended) A semiconductor device electrostatic discharge protection structure on a substrate comprising:

a first doped region of opposite dopant than said substrate extending down from the surface of said substrate;

a first isolation element at the surface region first lateral boundary between said first doped region and said substrate;

a heavily doped second region with associated electrical contact area within said first doped region of similar dopant to said first doped region;

a heavily doped third region with associated electrical contact area within said first doped region of opposite dopant to said first doped region;

a heavily doped fourth region with associated electrical contact area within said substrate of opposite doping than said substrate;

a heavily doped fifth region with associated electrical contact area within said substrate of similar dopant to said substrate;

a heavily doped sixth region of same dopant as said doped second region located at the surface region second lateral boundary of said first doped region and said substrate;

a second isolation element adjacent to said fifth doped region and on opposite side from said fourth doped region;

a first gate element overlying said surface region between said fourth doped region and said sixth doped region;

a first insulation element layer on said substrate surface except on electrical contact areas;
a first electrical conduction element connecting said second and third doped regions to a
first voltage source;
a second electrical conduction element connecting said fourth and fifth doped regions and
said first gate element and to a second voltage source; and
a top passivation layer overlaying said device surface;~~The protection structure of claim 8~~
wherein said first insulation element layer consists of thermally deposited silicon dioxide to
a thickness of between 1000 and 3000 Å to block the formation of said salicide in unwanted non-
contact areas.

15-26. (Canceled).

27. (Currently Amended) A semiconductor device electrostatic discharge protection
structure comprising:
a first doped region;
a second doped region of opposite dopant than said first doped region, adjacent to said first
doped region;
a heavily doped third region with associated electrical contact area within said second
doped region of similar dopant to said second doped region;
a heavily doped fourth region with associated electrical contact area within said second
doped region of opposite dopant than said second doped region, forming a first PN junction
between said second and fourth doped regions;

a heavily doped fifth region with associated electrical contact area within said first doped region of similar dopant to said first doped region;

a heavily doped sixth region with associated electrical contact area within said ~~first-fourth~~ doped region of opposite dopant than said first doped region, forming a second PN junction between said first and sixth doped regions, wherein said fourth and sixth doped regions are between said third and fifth doped regions;

an insulation element layer on said fourth and sixth regions, blocking the formation of salicide on top surfaces of said first and second PN junctions;

a first electrical conduction element connecting said third and fourth doped regions and to a first voltage source; and

a second electrical conduction element connecting said fifth and sixth doped regions and to a second voltage source.

28. (Currently Amended) The protection structure of claim ~~27~~²⁰, further comprising:

a heavily doped seventh region of same dopant as said doped second region located at the surface region lateral boundary between said first and second doped regions;

wherein the insulation element layer is formed on the seventh doped region.

29. (Currently Amended) The protection structure of claim ~~28~~²¹, further comprising:

a gate element overlying a surface region between said sixth and seventh doped regions.

30. (Currently Amended) The protection structure of claim 2720, further comprising:
first and second isolation elements adjacent to said third and fifth doped regions
respectively;
wherein said third, fourth, fifth and sixth doped regions are located between said first and
second isolation elements.

31. (Currently Amended) The protection structure of claim 2720, wherein said second
doped region is N doped with a concentration between $1\text{E}16$ and $1\text{E}18 \text{ a/cm}^3$.

32. (Currently Amended) The protection structure of claim 2720, wherein said third and
said sixth heavily doped regions are N doped to a concentration between $1\text{E}19$ and $1\text{E}21 \text{ a/cm}^3$.

33. (Currently Amended) The protection structure of claim 2720 wherein said fourth and
said fifth heavily doped regions are P doped to a concentration between $1\text{E}19$ and $1\text{E}21 \text{ a/cm}^3$.

34. (Currently Amended) The protection structure of claim 2720 wherein said insulation
element layer consists of thermally deposited silicon dioxide to a thickness of between 1000 and
3000 Å to block the formation of said salicide in unwanted areas.